Maryland
Department of
the Environment

Larry Hogan, Governor
Boyd Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

DRAFT

State of Maryland

2019 Annual SO_2 Data Requirements Report

for

Gen-On Chalk Point LLC Generating Station &
Gen-On Mid-Atlantic Morgantown Generating Station

addressing the

2010 1-Hour Sulfur Dioxide (SO_2) NAAQS Data Requirements Rule

April 13, 2020

Prepared for:
U.S. Environmental Protection Agency

Prepared by:
Maryland Department of the Environment

Maryland Department of the Environment
2019 Annual Data Requirements Report
2010 1-Hour SO_2 NAAQS
Chalk Point Generating Station
Morgantown Generating Station

Maryland Department of the Environment
Air and Radiation Administration
1800 Washington Boulevard, Suite 730
Baltimore, Maryland 21230
Phone 410.537.3255 • Fax 410.537.4223

Table of Contents

1.0 PURPOSE **1**
2.0 BACKGROUND **1**
3.0 ONGOING DATA REQUIREMENTS **2**
3.1 MORGANTOWN GENERATING STATION 2
3.2 CHALK POINT GENERATING STATION 3
4.0 TECHNICAL ANALYSIS FOR CHALK POINT GENERATING STATION **3**
5.0 CONCLUSION **4**
APPENDIX A: PUBLIC COMMENTS AND RESPONSES **5**

Purpose

The Maryland Department of the Environment Air and Radiation Administration (MDE – ARA) has prepared this report as the state's stand-alone Annual Data Requirements Report, including data through 2019, for the 2010 1-hour sulfur dioxide (SO_2) primary National Ambient Air Quality Standard (NAAQS). The report is designed to fulfill the annual reporting requirements under the U.S. Environmental Protection Agency's (EPA) "Data Requirements Rule for the 2010 1-Hour Sulfur Dioxide (SO_2) Primary National Ambient Air Quality Standard (NAAQS); Final Rule," 80 Fed. Reg., 51052, dated August 21, 2015, as codified at 40 CFR Part 51.1205.[1]

Background

The U.S. EPA promulgated a primary (health-based) national ambient air quality standard for sulfur dioxide in 2010. The EPA set the standard at a level of 75 parts per billion (ppb) in ambient air (also measured as 196.4 micrograms per cubic meter, $\mu g/m^3$). The standard is based on a 1-hour averaging time for the emissions of SO_2.[2]

Under the Clean Air Act, the EPA is required to determine if areas of the country meet the new standard. States and tribes submit recommendations to the EPA as to whether or not an area is attaining the national ambient air quality standards. The states and tribes base these recommendations on air quality data collected from ambient air monitors at locations in urban and rural settings. The states and tribes consider other information characterizing air quality, for example, air quality dispersion modeling (computer simulations of air quality). After working with the states and tribes and considering the information from air quality monitors, and/or air quality models, EPA will "designate" an area as "unclassifiable/attainment" or "nonattainment" for the standard.

On January 9, 2018 (83 Fed. Reg. 1098), in round 3 of the SO_2 area designations, the EPA designated most of Maryland as "unclassifiable/attainment" for the 1-hour SO_2 NAAQS. This included Prince George's County where the Gen-On Chalk Point LLC (formerly NRG Chalk Point) Generating Station is located, and Charles County where the Gen-On Mid-Atlantic Morgantown Generating Station is located.

EPA made the round 3 decisions based on state input, air dispersion modeling analysis,[3] and the background air monitoring data available at the time (2014-2016). Before the final modeling reports were submitted to EPA, modeling protocols were developed to outline the procedures to

[1] U.S. Environmental Protection Agency (August 21, 2015). Retrieved 3/24/2020 from https://www.govinfo.gov/content/pkg/FR-2015-08-21/pdf/2015-20367.pdf.
[2] U.S. Environmental Protection Agency (June 22, 2010), Primary National Ambient Air Quality Standard for Sulfur Dioxide; Final Rule, 75 Fed. Reg. 35520. Retrieved 3/24/2020 from https://www.govinfo.gov/content/pkg/FR-2010-06-22/pdf/2010-13947.pdf.
[3] U.S. Environmental Protection Agency (August 2017). Technical Support Document, Chapter 18, Intended Round 3 Area Designations for the 2010 1-Hour SO_2 Primary National Ambient Air Quality Standard for the State of Maryland, Retrieved 3/24/2020 from https://www.epa.gov/sites/production/files/2017-08/documents/18_md_so2_rd3-final.pdf.

follow for the final modeling analyses. The modeling protocols were developed based on relevant guidance outlined in EPA's Modeling Technical Assistance Document (TAD)[4] at the time of preparation. EPA was given the opportunity to review the modeling protocol and provide comments to MDE in March 2016, resulting in a final modeling protocol used in the final modeling analysis. After careful review of the supporting documentation and all available data, EPA made the designation decisions.

Ongoing Data Requirements

In the United States Code of Federal Regulations (CFR), 40 CFR Part 51.1205 "Ongoing Data Requirements,"[5] EPA states the following:

> (b) *Modeled areas.* For any area where modeling of actual SO_2 emissions serve as the basis for designating such area as attainment for the 2010 SO_2 NAAQS, the air agency shall submit an annual report to the EPA Regional Administrator by July 1 of each year, either as a stand-alone document made available for public inspection, or as an appendix to its Annual Monitoring Network Plan (also due on July 1 each year under 40 CFR 58.10), that documents the annual SO_2 emissions of each applicable source in each such area and provides an assessment of the cause of any emissions increase from the previous year. The first report for each such area is due by July 1 of the calendar year after the effective date of the area's initial designation.
>
> (1) The air agency shall include in such report a recommendation regarding whether additional modeling is needed to characterize air quality in any area to determine whether the area meets or does not meet the 2010 SO_2 NAAQS. The EPA Regional Administrator will consider the emissions report and air agency recommendation, and may require that the air agency conduct updated air quality modeling for the area and submit it to the EPA within 12 months.
>
> (2) An air agency will no longer be subject to the requirements of this paragraph (b) for a particular area if it provides air quality modeling demonstrating that air quality values at all receptors in the analysis are no greater than 50 percent of the 1-hour SO_2 NAAQS, and such demonstration is approved by the EPA Regional Administrator.

1.1 Morgantown Generating Station

Based on EPA's Data Requirements Rule (40 CFR Part 51.21205), MDE is not required to submit an annual report or other data to substantiate the area's continued compliance with the SO_2 NAAQS. This is due to the fact that the air quality modeling that was conducted to inform EPA's "unclassifiable/attainment" designation for the area including the Morgantown Generating Station showed ambient SO_2 concentrations of **less than 50% of the SO_2 NAAQS**. Also, the SO_2 emissions from the Morgantown Generating Station have declined substantially in

[4] U.S. Environmental Protection Agency, Office of Air and Radiation, Office of Air Quality Planning and Standards, Air Quality Assessment Division (February 2016). Draft SO_2 NAAQS Designations Modeling, Technical Assistance Document.
[5] U.S. Environmental Protection Agency (August 21, 2015). Retrieved 3/24/2020 from https://www.govinfo.gov/content/pkg/FR-2015-08-21/pdf/2015-20367.pdf.

the most recent years (2017, 2018, and 2019) since the modeling was done. In fact, the average annual SO_2 emissions in 2014-2016, according to EPA's Clean Air Markets Division, was 2,839.95 tons per year (tpy), whereas in 2017-2019 the average annual SO_2 emissions was 1,432.97 tpy, a near 50% decrease in the emissions.[6]

1.2 Chalk Point Generating Station

This report is focused on the ongoing annual reporting requirements for SO_2 emissions in the area that includes the Chalk Point Generating Station. EPA's Data Requirements Rule requires an annual SO_2 emissions report in areas of the state where **actual** rather than allowable (permitted) SO_2 emissions data served as the basis for EPA designating the area **attainment** of the 2010, 1-hour SO_2 NAAQS, and where the area's modeled air quality **exceeded 50 percent** of the 196 micrograms per cubic meter ($\mu g/m^3$) 1-hour SO_2 NAAQS. In the state of Maryland, only one sulfur dioxide emissions source met both of these criteria: Chalk Point Generating Station in Aquasco, Prince George's County, Maryland.

Technical Analysis for Chalk Point Generating Station

The modeling indicates that the highest predicted 99th percentile daily maximum 1-hour SO_2 concentration within the chosen modeling domain is 106.79 $\mu g/m^3$, equivalent to 40.8 ppb. This modeled concentration included the background concentration of SO_2 of 28.82 $\mu g/m^3$, and is based on actual emissions from the facility. The model used actual SO_2 emissions data from a three-year timeframe (2012-2014). The air quality modeling was conducted by AECOM for NRG, the former owner of the Chalk Point Generating Station, and reviewed for accuracy by MDE and EPA Region 3.[7] The annual SO_2 emissions modeled by AECOM for the 2012-2014 timeframe are presented in Table 1 below.[8]

MDE has acquired additional emissions data from the EPA's Clean Air Market Division (CAMD) database[9] and confirmed the emissions data agree with data in the Maryland Department of the Environment's (MDE) Tools for Environmental Management and Protection Organizations (TEMPO), a relational database management system.

Chalk Point's SO_2 modeled emissions for the 2012-2014 period as well as the CAMD emissions for 2015-2019 are shown below. They show continued declines in SO_2 emissions from the Chalk Point Generating Station. On average the annual SO_2 emissions decreased from 3,874 tons per year in the 2012-2014 timeframe, to 569 tons per year in the 2017-2019 timeframe.

[6] U.S. Environmental Protection Agency, Clean Air Markets Division. Air Markets Program Data, Retrieved 3/24/2020 from https://ampd.epa.gov/ampd/.
[7] U.S. Environmental Protection Agency (August 2017). Technical Support Document, Chapter 18, Intended Round 3 Area Designations for the 2010 1-Hour SO_2 Primary National Ambient Air Quality Standard for the State of Maryland, p. 28, Retrieved 3/26/2020 from https://www.epa.gov/sites/production/files/2017-08/documents/18_md_so2_rd3-final.pdf.
[8] U.S. Environmental Protection Agency (August 2017), p. 36.
[9] U.S. Environmental Protection Agency, Clean Air Markets Division. Air Markets Program Data, Retrieved 3/24/2020 from https://ampd.epa.gov/ampd/.

Table 1: Reported SO_2 Emissions (tpy) and Correlated SO_2 Model Results ($\mu g/m^3$) for Chalk Point Generating Station (Units 1-4)

	Modeled SO_2 Emissions (tons/year)[10]			SO_2 Reported Emissions from CAMD database (tons/year)[11]				
	2012	2013	2014	2015	2016	2017	2018	2019
	3,633.9	4,231.1	3,756.5	1,491.60	925.55	535.76	765.94	406.15

	SO_2 Emissions Correlated to Model Results		
	2012 – 2014		2017 – 2019
Maximum Model Results ($\mu g/m^3$)	106.79		(not applicable)
3 Year Emission Average (tons/year)	3,873.83		569.28

Conclusion

The MDE has determined that the area continues to meet the 1-hour SO_2 NAAQS. No additional modeling analysis is necessary to ensure the Chalk Point Generating Station area remains consistent with the EPA's original attainment/unclassifiable designation for the modeled area.

[10] U.S. Environmental Protection Agency (August 2017). Technical Support Document, Chapter 18, Intended Round 3 Area Designations for the 2010 1-Hour SO_2 Primary National Ambient Air Quality Standard for the State of Maryland, p. 36, Retrieved 3/26/2020 from https://www.epa.gov/sites/production/files/2017-08/documents/18_md_so2_rd3-final.pdf.

[11] U.S. Environmental Protection Agency, Clean Air Markets Division. Air Markets Program Data, Retrieved 3/26/2020 from https://ampd.epa.gov/ampd/.

APPENDIX A: Public Comments and Responses

Public Comment

In accordance with 40 CFR 51.1205, MDE will make this stand-alone report available for public inspection and comment for 30 days. This report will be posted on the MDE Web site at https://mde.maryland.gov/programs/Air/AirQualityPlanning/Pages/index.aspx. MDE will also notify stakeholders, via email, of the public comment period.

Additional information on any public comments received, including responses to the comments, will be included in this appendix after the public comment period is complete.